

**REMARKS**

**INTRODUCTION:**

In accordance with the foregoing, claim 18 has been cancelled without prejudice or disclaimer and claims 2, 5-8, 10, 11, 13, 22, 23, and 26 have been amended. No new matter is being presented, and approval and entry are respectfully requested.

Support for these amendments can be found in the Specification, e.g., at page 18, line 26, and p. 30, lines 22-27.

Claims 2, 5-8, 10, 11, 13, 15, 16, 22, 23, 25, and 26 are pending and under consideration. Reconsideration is requested.

**CLAIM OBJECTIONS:**

In the Office Action, at page 3, items 2 and 3, the Examiner objected to claims 13 and 18.

Claim 18 has been cancelled without prejudice or disclaimer.

Applicants respectfully submit that the amendment of claim 13 overcomes the Examiner's objection.

**REJECTIONS UNDER 35 U.S.C. §112:**

In the Office Action, at pages 5-10, The Examiner rejected claims 2, 5-8, 10, 11, 13, 18, 22, and 26 under 35 U.S.C. §112, second paragraph, as being indefinite. The reasons for the rejection are set forth in the Office Action and therefore not repeated. Applicants traverse this rejection and respectfully request reconsideration.

Claim 18 has been cancelled without prejudice or disclaimer.

Applicants respectfully submit that the amendments of claims 2, 5-8, 10, 11, 13, 22, and 26 overcome the Examiner's rejections.

Regarding the §112 rejection of claim 13, Applicants respectfully note that the claim is directed to a "system," not a method.

**REJECTIONS UNDER 35 U.S.C. §101:**

In the Office Action, at page 8, item 8, The Examiner rejected claim 11 under 35 U.S.C. §101. The reasons for the rejection are set forth in the Office Action and therefore not repeated. Applicants traverse this rejection and respectfully request reconsideration.

Applicants respectfully submit that the amendment of claim 11 overcomes the Examiner's rejection.

**REJECTIONS UNDER 35 U.S.C. §103:**

In the Office Action, at page 13, item 19, the Examiner rejected claims 2, 5-8, 10, 11, 13, 15, 16, 18, 22, 23, 25, and 26 under 35 U.S.C. §103(a) as being unpatentable over "Process Subsystem Architecture for Virtual Manufacturing Validation" by J. Michael Griesmeyer and Fred J. Oppel, III (hereinafter Griesmeyer). The reasons for the rejection are set forth in the Office Action and therefore not repeated. Applicants traverse this rejection and respectfully request reconsideration.

Claim 18 has been cancelled without prejudice or disclaimer.

Amended, independent claim 2 recites: "...a workshop development process of constructing an actual workshop including various facilities and layouts compatible with the verified virtual workshop; and a remote monitoring process of remote monitoring the production state and the physical distribution state of the facilities in the layout employed in the actual workshop so constructed, and comparing the production state and the physical distribution state on the layout in the actual workshop that have been monitored, with the production state and the physical distribution state on the layouts that have been simulated, to update the data model, and selectively re-perform the virtual workshop verifying process."

Amended, independent claim 13 recites: "...an actual workshop constructed according to the model of the virtual workshop so verified; and a remote monitoring unit remote monitoring the production state and the physical distribution state of the facilities in a layout employed in the actual workshop constructed according to the model of the virtual workshop so verified, and comparing the production state and physical distribution state on the layout in the actual workshop with the production state and distribution state on the layouts that have been simulated by the simulating unit."

Amended, independent claim 22 recites: "...an actual workshop constructed to correspond to the verified virtual workshop; a remote monitoring system remote monitoring the actual workshop corresponding to the verified virtual workshop; and a link means performing a linking process between the virtual workshop system and the remote monitoring system, wherein the remote monitoring system performs a remote maintenance in the actual workshop using information obtained from the remote monitoring."

And amended, independent claim 26 recites: "...an actual workshop constructed to correspond to the verified virtual workshop, wherein the actual workshop includes a production line defined by production facilities and physical distribution facilities

Regarding the Examiner's interpretation of claim 5, Applicants respectfully disagree. Applicants respectfully submit that the Specification does indeed support the meaning of quality as "the degree of excellence of something as measured against other similar things," e.g., at p. 8, lines 15-17, p. 28, lines 26-29, p. 40, lines 13-15, and p. 40, lines 1-7.

Applicants respectfully submit that one of ordinary skill in the art would interpret the word "quality" as used in the claims and Specification, to mean "the degree of excellence of something as measured against other similar things."

Further, Applicants respectfully submit that Griesmeyer neither discloses nor suggests determining the quality of items produced in the virtual validation.

Griesmeyer discloses a process control architecture for validating manufacturing modeling by employing the same control software in both the actual manufacturing and the modeled manufacturing. (See Griesmeyer, at Abstract). More specifically, Griesmeyer discloses formulating a virtual model of a production process and verifying the virtual model (see Griesmeyer, at §§4 and 3.1.1), the verifying including simulating the production process and running the simulation (see Griesmeyer, e.g. at §3.1.1, and 3.2).

Section 4 of Griesmeyer, states "The configuration fields and the part tracking components of the assembly subsystem are verified together with the assembly sequence parameters using the virtual drivers to the primitives. Then the construction of the actual assemblies are performed with the validated scripts using the real drivers."

The Examiner asserts that this passage discloses the claimed "...constructing an actual workshop including various facilities and layouts compatible with the verified virtual workshop...." Applicants respectfully disagree.

Contrary to the Examiner's assertion, Applicants respectfully submit that the above-noted section is not discussing the construction of the robotic assembly subsystem in the Advanced manufacturing Production System (AMPS). Instead, the assemblies discussed in the above-noted section are the small electro-mechanical devices mentioned in the first sentence of section 4.

Further, Section 3 of Griesmeyer describes the conveyers, assembly subsystems, vision system, and control software of the already-constructed AMPS robotic assembly subsystem.

And the last sentence of section 3 describes requirements of simulation of this already-constructed system.

In other words, the simulation in Griesmeyer is simulation of a prior-constructed assembly system (the AMPS robotic assembly subsystem).

Accordingly, Applicants respectfully submit that Griesmeyer neither discloses nor suggests "constructing an actual workshop including various facilities and layouts compatible with the verified virtual workshop," since the virtual validation described in Griesmeyer validates manufacturing processes to be run on an already-constructed real system using the software to control the real system in the simulation.

Further still, while the approach disclosed in Griesmeyer "makes it possible to reduce the number of real prototypes required to develop a validated manufacturing process," at best, the approach disclosed in Griesmeyer could reduce the required number of prototypes to one.

In contrast, by way of a non-limiting example, the claimed methods and systems could eliminate the need for such a prototype, since the process is validated prior to construction of the workshop, and the workshop is constructed in accordance with the verified virtual workshop.

Applicants respectfully submit that in the subject application, not production facilities, but a production state and a physical distribution state on layouts are verified. Accordingly, potential bottlenecks can be found. Applicants respectfully submit that such an advantage cannot be achieved by the system in Griesmeyer.

Additionally, with respect to now-independent claim 22, Applicants respectfully submit that Griesmeyer neither discloses nor suggests a remote monitoring system that performs a remote maintenance in the actual workshop using information obtained from the remote monitoring.

Accordingly, Applicants respectfully submit that independent claims 2, 13, 22, and 26 patentably distinguish over the cited art, and should be allowable for at least the above-mentioned reasons. Further, Applicants respectfully submit that claims 5-8, 10, 11, 15, 16, 23, and 25, which variously depend from independent claims 2, 13, or 22, should be allowable for at least the same reasons as claims 2, 13, and 22, as well as for the additional features recited therein.

CONCLUSION:

In accordance with the foregoing, Applicants respectfully submit that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the cited art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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